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DOE-EM-STD-5502-94
August 1994

DOE LIMITED STANDARD

HAZARD BASELINE DOCUMENTATION

U.S. Department of Energy
Washington, D.C. 20585

AREA SAFT

FOREWORD

This Department of Energy (DOE) limited technical standard has been prepared by the Office of Environmental Management (EM), Office of Safety and Health (EM-23) on the basis of currently available technical information. There have been questions raised by the line organizations and the field on how to integrate the requirements of the various DOE Orders and regulations relating to hazard baseline documentation and the protection of the workers and the public. This standard serves as a road map to those requirements. The standard also provides supplementary detail on the suggested method for integrating and implementing these requirements for EM activities. Hazard baseline documentation to solely protect the environment is currently outside the scope of this EM limited technical standard.

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1. SCOPE

1.1 Scope. This standard establishes uniform Office of Environmental Management (EM) guidance on hazard baseline documents that identify and control radiological and non-radiological hazards for all EM facilities. (As used throughout this guidance document, the term "facilities" is meant to be all inclusive, and to encompass activities and projects as well as physical facilities. Care should be taken to include support activities as part of a facility and to assure that such hazardous activities are not overlooked.)

The facility and cognizant contractor(s) in cooperation with the responsible DOE Operations Office, shall identify the activities, or groups of activities, that logically should be grouped as a “facility" for the purpose of safety and health documentation development. Ideally, these facilities would also be appropriate for Standards Requirements Identification Documents (S/RIDs) development. The S/RIDS will commit each facility to compliance with specific requirements and, together with hazard baseline documentation, will provide a technical basis for ensuring that the public and workers are protected.

This document provides a road map to the safety and health hazard identification and control requirements contained in the Department's Orders and provides EM guidance on the applicability and integration of these requirements. This includes: (1) a definition of four classes of facilities (nuclear, non-nuclear, radiological, and other industrial facilities); (2) the thresholds for facility hazard classification; and (3) the applicable safety and health hazard identification, controls, and documentation.

This guidance supersedes those portions of the memoranda by Leo Duffy on February 6, 1991, "Safety and Health Review for Startup/Restart of Operations" and March 11, 1992, "Interim Guidance on Safety Analysis Documentation" related to safety analysis, facility grouping, and hazard baseline documentation requirements. This standard addresses:

1. EM facility grouping and safety and health hazard identification and control documentation;

2. The integration of similar hazard identification and control analyses in different documents; and

3. The development and maintenance of safety and health documents.

The priorities placed on the development, maintenance, and implementation of safety and health hazard identification and control shall provide both workers and the public appropriate levels of protection.

1.2 Applicability. This standard applies to the classification, development, review and approval of hazard identification and control documentation for EM facilities. This standard is currently a limited technical standard but may be broadened at a later time for other DOE elements. This standard applies to all life cycle stages of an EM facility including construction, operations, deactivation, decommissioning and decontamination, removal, disposal, and remediation. Startup or restart of facilities is not included in this standard. This subject is covered in DOE 5480.31, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-93, *Planning and Conduct of Operational Readiness Reviews*. This standard also does not cover DOE facilities that are under the jurisdiction of the NRC.

This standard contains criteria for the grouping of EM facilities into nuclear, radiological, non-nuclear, or industrial. The grouping of facilities is solely for the purpose of determining the type, grading, and complexity of the hazard identification and control documentation (and corresponding review and approval process). Enforcement of requirements (rules, Departmental Directives, or S/RIDs) is based on the inventory and the form of the hazards involved rather than the groupings discussed herein. This standard provides guidance on complying with and integrating various requirements on hazard identification and control documentation, and provides supplementary detail on how to comply with these requirements.

2. APPLICABLE DOCUMENTS

2.1 Federal Regulations. The following federal regulations are referenced in this technical standard.

10 CFR 830, *Nuclear Safety Management*
29 CFR 1200, *Minimum Standards of Conduct for Employees of the National Mediation Board*
29 CFR 1910.5, *Applicability of Standards*
29 CFR 1910.119, *Process Safety Management*
29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*
29 CFR 1926, *Safety and Health Requirements for Construction*
29 CFR 1450, *Collection of Claims Owed to the United States*
40 CFR 302, *Designation, Reportable Quantities, and Notification*
40 CFR 355, *Emergency Planning and Notification*

Copies of federal regulations are available from the Government Printing Office (GPO), Superintendent of Documents, Mail Stop: SSOP, Washington, D. C. 20402-9329

2.2 Department of Energy Documents. The following DOE Orders and Notices are referenced in this technical standard.

DOE 5480.1A, *Environmental, Safety and Health Program for Department of Energy Operations*
DOE 5480.4, *Environmental Protection, Safety, and Health Protection Standards*
DOE 5480.5, *Safety of Nuclear Facilities*
DOE N 5480.6, *US Department of Energy Radiological Control Manual*
DOE 5480.9A, *Construction Safety and Health Program*
DOE 5480.10, *Contractor Industrial Hygiene Program*
DOE 5480.11, *Radiation Protection for Occupational Workers*
DOE 5480.21, *Unreviewed Safety Questions*

DOE 5480.22, *Technical Safety Requirements*

DOE 5480.23, *Nuclear Safety Analysis Reports*

DOE 5480.25, *Safety of Accelerator Facilities*

DOE 5480.31, *Startup and Restart of Nuclear Facilities*

DOE 5481.1B, *Safety Analysis and Review System*

DOE 5483.1A, *Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned, Contractor-Operated Facilities*

Copies of DOE Orders are available from:

Department of Energy
AD-631/FORS
Washington, DC 20585
(202) 586-9642

2.2.1 DOE Standards. The following DOE draft and issued technical standards provide greater definition and depth on aspects of safety baseline documentation related to this standard.

Nuclear Safety

DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*

DOE-STD-3005-XX, *Definitions and Criteria for Accident Analysis*

DOE-STD-3006-93, *Planning and Conduct of Operational Readiness Reviews*

DOE -STD-3009-93, *SAR Preparation Guide*

DOE-STD-3011-93, *Basis for Interim Operations*

Non-Nuclear Safety

DOE Guideline DOE/EH, *Guide for Chemical Process Hazard Analysis*

DOE/EV/06194-5, *Explosive Safety Manual*

Worker Health and Safety

DOE-STD-5503-94, *EM HASP Model*

DOE/ID-10500, *Hoisting and Rigging Manual*
HAZWOPER Health and Safety Handbook
Industrial Hygiene Standard for Worker Protection
Occupational Safety and Health Guidance
DOE Asbestos Standard
Industrial Hygiene Technical Standard for Non-Ionizing Radiation and Fields
DOE Industrial Hygiene Standard for Noise
DOE HAZWOPER Standard
DOE Beryllium Standard
DOE Hazcomm Standard
DOE Occupational Carcinogens
DOE Exposure Assessments

Copies of DOE technical standards are available for DOE employees, contractors, and laboratories from the Office of Scientific and Technical Information (OSTI), P.O. Box 62, Oak Ridge, Tennessee 37831, (615) 576-8401, FAX (615) 576-2865. Others may obtain copies of these documents from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, (703) 487-4636, (800) 336-4700 (rush orders), FAX (703) 321-8547.

2.3 Non-Government Publications The following non-government guidance documents provide greater definition on safety basis documentation:

WHC-EP-0726, *General Safety Basis Development Guidance for Environmental Restoration Decontamination and Decommissioning*, Westinghouse Hanford Company, February 1994

2.4 Order of Precedence. In the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws, regulations, and DOE Orders unless a specified exemption has been obtained.

3. DEFINITIONS

All key terms used in this standard are defined as follows:

3.1 Authorization Basis are those aspects of the facility design basis and operational requirements relied upon by DOE to authorize operation. These aspects are considered to be important to the safety of facility operations. The authorization basis is described in documents such as the facility Safety Analysis Report and other safety analyses; Hazard Classification Documents, the Technical Safety Requirements, DOE-issued safety evaluation reports, and facility-specific commitments made in order to comply with DOE rules, Orders or policies.
(DOE 5480.21)

3.2 Decommissioning means the process of closing and securing a facility or storage facility with radioactive or hazardous material so as to provide adequate protection from radiation and hazardous material exposure and to isolate radioactive contamination and hazardous material from the human environment. (DOE 5480.30)

3.3 Decontamination means the act of removing a chemical, biological, or radiologic contaminant from, or neutralizing its potential effect on a person, object or environment by washing, chemical action, mechanical cleaning, or other techniques. (DOE 5480.30)

3.4 Facility Any equipment, structure, system, process, or activity that fulfills a specific purpose. Examples include accelerators, storage areas, fusion research devices, nuclear reactors, production or processing plants, coal conversion plants, magnetohydrodynamics experiments, windmills, radioactive waste disposal systems, and burial grounds, environmental restoration activities, testing laboratories, research laboratories, transportation activities, and accommodations for analytical examinations of irradiated and unirradiated components.
(DOE 5000.3B)

3.5 Graded Approach means a process by which the level of analysis, documentation, and actions necessary to comply with the requirements of this part are commensurate with: (1)

the relative importance to safety, safeguards, and security; (2) the magnitude of any hazard involved; (3) the life cycle stage of a facility; (4) the programmatic mission of a facility; (5) the particular characteristics of a facility; and (6) any other relevant factor.
(10 CFR 830.3)

3.6 Hazard means a source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation). (10 CFR 830.3)

3.7 Hazard Classes Non-nuclear facilities will be categorized as high, moderate, or low hazards based on the following:

a. High - hazards with a potential for onsite and offsite impacts to large numbers of persons or for major impacts to the environment,

b. Moderate - hazards which present considerable potential onsite impacts to people or the environment, but at most only minor offsite impacts, and

c. Low - hazards which present minor onsite and negligible offsite impacts to people and the environment. (DOE 5481.1B)

3.8 Hazard Categories The consequences of unmitigated releases of radioactive and/or hazardous material are evaluated as required by DOE 5480.23 and classified by the following hazard categories:

a. Category 1. The hazard analysis shows the potential for significant offsite consequences.

b. Category 2. The hazard analysis shows the potential for significant onsite consequences.

c. Category 3. The hazard analysis shows the potential for only significant localized consequences. (DOE 5480.23)

3.9 Hazardous Materials are those materials that are toxic, explosive, flammable, corrosive, or otherwise physically or biologically threatening to health. (10 CFR 830.3)

3.10 Implementation Plan means a document prepared by a contractor that sets forth:

(1) When and how the actions appropriate to comply with the requirements of a section of this part, including the requirements of a plan or program required by this section, shall be taken, and

(2) What relief will be sought if a contractor cannot attain full compliance with a requirement in a reasonable manner. (10 CFR 830.3)

3.11 Nonreactor Nuclear Facility means those activities or operations that involve radioactive and/or fissionable materials in such a form and quantity that a nuclear hazard potentially exists to the employees or the general public. Incidental use and generation of radioactive materials in facility operation (e.g., check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscope, and X-ray machines) would not ordinarily require the facility to be included in this definition. Transportation of radioactive materials, accelerators and reactors and their operations are not included. The application of any rule to a nonreactor nuclear facility shall be applied using a graded approach. Included are activities or operations that:

(1) Produce, process, or store radioactive liquid or solid waste, fissionable materials, or tritium;

(2) Conduct separations operations;

(3) Conduct irradiated materials inspections, fuel fabrication, decontamination, or recovery operations;

(4) Conduct fuel enrichment operations;

(5) Perform environmental remediation or waste management activities involving radioactive materials; or

(6) Design, manufacture, or assemble items for use with radioactive materials and/or fissionable materials in such a form or quantity that a nuclear hazard potentially exists. (10 CFR 830.3)

3.12 Nuclear Facility means reactor and nonreactor nuclear facilities. (10 CFR 830.3)

3.13 Radiological Facilities are those facilities that do not meet or exceed the hazard category 3 threshold quantity values published in DOE-STD-1027-92 but still contain some quantity of radioactive material (above those discussed in Appendix B to 40 CFR 302).

3.14 Safety Analysis means a documented process:

(1) To provide systematic identification of hazards within a given DOE operation;

(2) To describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards; and

(3) To analyze and evaluate potential accidents and their associated risks.

(10 CFR 830.3)

3.15 Safety Analysis Report or SAR means that report which documents the adequacy of safety analysis for a nuclear facility to ensure that the facility can be constructed, operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations. (10 CFR 830.3)

3.16 Safety Basis means the combination of information relating to the control of hazards at a nuclear facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely. (10 CFR 830.3)

3.17 Safety Evaluation is that record required by this Order to document the review of the "change." This evaluation documents the scope of the evaluation and the logic for determining whether or not an Unreviewed Safety Question exists. (DOE 5480.21)

3.18 Unreviewed Safety Questions (USQ) Whether or not a USQ issue constitutes a hazard is based on a determination made by examining the following circumstances: (1) temporary or permanent changes in the facility as described in the existing safety analysis; (2) temporary or permanent changes in the procedures as derived from safety analysis; and (3) tests or experiments not described in existing safety analysis. On identification of any of the above circumstances, an Unreviewed Safety Question exists if one or more of the following conditions result: (1) the probability of occurrence or the consequences of

an accident or malfunction of equipment important to safety as previously evaluated in the facility safety analysis could be increased; (2) the possibility for an accident or malfunction of a different type than any previously been evaluated in the facility safety analysis could be created; and (3) any margin of safety as defined in the bases of the Technical Safety Requirements could be reduced. (DOE 5480.21)

3.19 Worker Persons working in the immediate area of concern within the process safety management control of a given facility or activity. Normally these individuals are covered implicitly under the worker health and safety plan for a given activity or operation. For the purposes of this standard, the term "workers" is meant to be all inclusive, and includes all workers such as the facility workers, co-located workers, contractors, subcontractors employees, and visitors.

4. GENERAL CRITERIA

4.1. EM Facility Classification Criteria and Hazard Baseline Documentation Requirements

Safety and health hazard identification and control documentation appropriate to the categorization, classification, and life cycle stage shall be developed and maintained for each EM facility. All EM facilities involved with hazardous waste and environmental restoration activities as defined in 29 CFR 1910.120(a) shall have a Health and Safety Plan (HASP) in accordance with 29 CFR 1910.120 which is invoked in DOE 5480.4, *Environmental Protection, Safety, and Health Protection Standards*. Health and Safety Program requirements for construction activities include those in 29 CFR 1926. Safety and health requirements for laboratories are addressed in accordance with a Chemical Hygiene Plan per 29 CFR 1910.1450. Requirements for hazard communications are to be addressed in accordance with 29 CFR 1910.1200. Other DOE Orders with hazard identification and control requirements include DOE 5480.1A, *Environmental, Safety and Health Program for Department of Energy Operations*, DOE 5483.1A, *Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned, Contractor-Operated Facilities*, DOE 5480.10, *Contractor Industrial Hygiene Program*, and DOE 5480.11, *Radiation Protection for Occupational Workers*. If there is a conflict or overlap between 29 CFR 1910 and 29 CFR 1926, then the most stringent requirement shall apply without regard to 29 CFR 1910.5(c)(1), which would have otherwise required the use of specific standards over general standards.

The cognizant contractor (those organizations operating facilities, performing activities, or projects including Management & Operating Contractors, Environmental Restoration and Waste Management Contractors, and subcontractors) shall determine which safety and health documents are required based on the potential mix of hazards to the public and the workers. The facility's hazard category or classification shall be reviewed and approved by DOE Headquarters with the implementation plans (and based on the information in lists or databases for EM facilities) developed for existing facilities and safety documents (such as construction safety, Preliminary Safety Analysis Reports, or

Preliminary Health and Safety Plans) for new facilities. Figure 1, the "EM Hazard Baseline Documentation Process" flowchart illustrates the general decision logic used to match the types of EM facilities and the required documentation. Figure 2, the "Hazard Baseline Documentation Groupings", indicates the four groupings of EM facilities for which specific hazard baseline documents need to be developed. There is a hierarchy formed from the four groupings of facilities from the most to the least stringent based on the requirements of the hazards and risks. The hierarchy is nuclear, non-nuclear, radiological, and other industrial facilities.

Hazards identification is a dynamic process. New hazards may be introduced as a facility is used, as processes change, or as a project progresses causing a reassessment of the facility's grouping and revision of the facility's safety and health documents. Where hazards are removed or inventories are reduced by cleanup and/or decontamination and decommissioning activities, the hazard categorization or facility classification may be changed (e.g. nuclear facilities may become radiological, non-nuclear, or other industrial facilities). The documentation needed and/or approval levels for hazard baseline documents may be adjusted accordingly. For example, cleanup or decontamination of a category 2 nuclear facility could lead to a reduction in hazard grouping to a radiological or industrial facility.

4.2 Documentation Classification Thresholds

There are three primary regulatory thresholds or levels used for determining the appropriate EM hazard baseline documentation:

(1) Hazard category 3 per DOE 5480.23, *Nuclear Safety Analysis Reports*, and DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*;
(2) 29 CFR 1910.119, *Process Safety Management* (PSM); and
(3) 40 CFR 302, *Designation, Reportable Quantities, and Notification*.

DOE-STD-1027-92 identifies the threshold between a category 3 and a below category 3 nuclear facility as a comparison of the total segmented inventory with the values in Attachment 1 (to DOE-STD-1027-92) . The quantity limits in Attachment 1 were calculated, in general, by taking the product of the airborne release fraction and effective dose equivalents from different sources (e.g. inhalation, ground contamination, and cloud shine). For most EM applications, quantity limits in Attachment 1 are valid. For some applications such as the movement of contaminated soil or groundwater restoration, other release mechanisms and release fractions may be more appropriate. DOE-STD-1027-92 currently recommends further hazard evaluation where the use of the levels shown in the attachment are not valid. A EM DOE working group is currently developing specific methodologies to address some of these other processes. Category 3 is used to establish a demarcation between nuclear and radiological facilities.

The basis for the application of 29 CFR 1910.119 is the inventory quantity of hazardous substances which is determined by gross amounts (unadjusted by process) of hazardous materials. It was promulgated to prevent and mitigate the effects of major accidents at chemical facilities which can result in loss of life to the workers. The thresholds in 29 CFR 1910.119 are used to trigger PSM, the results of which would be incorporated in the operative hazard baseline documentation.

The releasable quantities in 40 CFR 302 are used to establish the dividing line between radiological or non-nuclear facilities and other EM industrial facilities. The same methodology as described in regard to DOE-STD-1027-92 should be used for this determination, including the release fraction in Attachment 1(for cases where the fraction is valid). The methodologies developed by the EM working group on hazard categorization should be used for other cases. The levels in 40 CFR 302 are based on the reportable quantities in pounds of material for hazardous substances and curies of material for radioactive substances. Reportable quantities are based on the release of materials into the environment.

5. DETAILED CRITERIA

5.1 Hazard Baseline Documentation Criteria for EM Nuclear Facilities

A facility is classified as "nuclear" if the radiological releasable inventory meets or exceeds those discussed in DOE-STD-1027-92, for Category 3 facilities. A nuclear facility shall comply with DOE 5480.23 and DOE 5480.22, *Technical Safety Requirements* (TSRs) and the corresponding nuclear safety rules, when issued. The SARs and TSRs define the safety envelope for project operations and are maintained by meeting the requirements of DOE 5480.21, *Unreviewed Safety Questions*. The principles and requirements of PSM, that is the team approach to process and hazards analysis, shall be integrated into the nuclear safety analysis process if the hazardous chemical thresholds established in 29 CFR 1910.119, are reached or exceeded. The principles and requirements of PSM are encouraged even for those facilities where the thresholds are not reached or exceeded.

Nuclear facilities shall be classified as Category 1, 2, and 3 in accordance with DOE 5480.23, using guidance provided in DOE-STD-1027-92. Nuclear facilities are required to develop a SAR. The extent of the documentation, the rigor, and the formality of the SAR is to be graded per DOE 5480.23. The primary objective of the graded approach is to match the rigor of the analysis and the extent of the documentation with the magnitude of the hazards and accident scenarios represented by the facility, the complexity of the facility and/or safety systems, and the facility's stage in its life cycle.

Regardless of the life cycle stage, nuclear facilities shall comply with the requirements in DOE 5480.22. The implementation of these requirements shall be graded in accordance with the Order and its corresponding guidance.

Nuclear facilities with hazardous waste activities shall develop and maintain an up-to-date and controlled HASP. The HASP shall be commensurate to the life cycle stage of the project, and shall be of direct use to the workers. If the elements of PSM

documentation are integrated into the SAR and HASP, then a separate document for PSM is not needed.

5.2 Hazard Baseline Documentation Criteria for EM Radiological Facilities

Radiological facilities are those with an inventory of radiological materials below the levels as defined in DOE-STD-1027-92, but above the reportable quantity (RQ) value listed in Appendix B to Table 302.4 (per 40 CFR 302).

As stated in DOE-STD-1027-92:

> " Radiological facilities are exempt from this Order (*sic DOE 5480.23*), but they are not exempt from other safety requirements. . . Exemption from the requirements of 5480.23 does not excuse the contractors from doing analysis, where applicable to evaluate potential significant radiation exposures to workers. . . Hazardous chemicals in facilities are governed by DOE Orders 5480.4, 5480.10, 5481.1B, and 5483.1A, and accelerators are covered by DOE Order 5480.25."

Radiological facilities shall develop an auditable (defendable) safety analysis (similar to a SAR but with much reduced content and requirements). An auditable safety analysis (ASA):

A. Provides systematic identification of hazards within a given DOE operation; and

B. Describes and analyzes the adequacy of measures taken to eliminate, control, or mitigate identified hazards.

Radiological facilities with hazardous waste activities require the development and maintenance of a HASP. The HASP process shall incorporate the results of, or document the ASA which may be integrated into the task analysis. Radiological facilities with inventories of hazardous materials at or above 29 CFR 1910.119 thresholds or the levels specified in 40 CFR 355, *Emergency Planning and Notification*,

(if the chemicals are not listed in 29 CFR 1910.119), shall develop the same safety documentation as required for non-nuclear facilities (per DOE 5481.1B).

5.3 Hazard Baseline Documentation Criteria for EM Non-Nuclear Facilities

A facility is categorized as "non-nuclear" if the amount of radioactive material potentially releasable from a facility is less than the RQ value listed in Appendix B to Table 302.4 of 40 CFR 302 and the amount of potentially releasable hazardous material exceeds the RQ values listed in Table 302.4 to 40 CFR 302. A non-nuclear facility shall comply with DOE 5481.1B, *Safety Analysis and Review System*, for the development, documentation, review, and approval of safety analyses. A safety analysis shall be documented in accordance with DOE 5481.1B (Chapter 1, sections 3 (a) and (d), and Chapter 2, sections 2 and 4) or in an auditable safety analysis. Non-nuclear facilities with inventories at or above 29 CFR 1910.119 thresholds or the levels specified in 40 CFR 355, (if the chemicals are not listed in 29 CFR 1910.119), shall develop a safety analysis. Non-nuclear facilities with hazardous material inventories between PSM thresholds and potentially releasable 40 CFR 320 levels, shall develop auditable safety analyses.

Contractors for EM non-nuclear facilities with hazardous waste activities shall also develop and maintain an up-to-date HASP. The HASP process shall incorporate the results of, or document an auditable safety analysis (similar to a SAR but with much reduced content and requirements) which may be integrated into the task analysis, if a non-nuclear SAR is not developed. EM non-nuclear facilities shall develop safety procedures in keeping with the requirements of the HASP. The principles and requirements of PSM, that is the team approach to process and hazards analysis, shall be integrated into the non-nuclear safety analysis process if the thresholds established in 29 CFR 1910.119, are reached or exceeded. If the elements of PSM documentation are integrated into the safety analysis and/or HASP, then a separate document for PSM is not needed.

5.4 Hazard Baseline Documentation Criteria for Other EM Industrial Facilities

Contractors shall implement recognized industrial practices (i.e., comply with safety and health requirements as mandated by OSHA), regardless of whether the amount of radioactive and hazardous material potentially releasable from a facility is less than the RQ values listed in 40 CFR 302 and its corresponding appendices. A HASP is required for all facilities with, or dealing with, hazardous waste activities. EM industrial facilities that do not deal with hazardous waste activities such as office buildings or parking lots may ensure the safety of workers through their appropriate OSHA safety and health programs and other related requirements such as construction safety requirements. Recognized industrial practices shall include measures primarily focused at the protection of workers. Measures to mitigate standard industrial hazards or accident scenarios may be embodied in procedures. Examples include hoisting and rigging safety requirements, fall protection, fire protection, electrical safety, and the cleanup of chemical spills (below thresholds). Health and safety requirements for construction projects shall be analyzed and documented in accordance with both 29 CFR 1926 and DOE 5480.9A.

5.5 Health and Safety Plans

For all EM facilities having or dealing with hazardous waste, a HASP shall be developed in accordance with 29 CFR 1910.120 as mandated by DOE 5480.4 and DOE 5483.1A. It shall, as a minimum, cover each site, task, operation, activity, or project defined in the workplan, and address the following elements:

A. Health and safety risk or hazard identification for each site task, operation, activity, or project defined in the workplan. All chemical, radiological, and physical hazards, e.g. noise and heat, must be identified in the HASP. Actions taken to mitigate risks or hazards shall be identified. This risk or hazard identification should have a common basis with, or integrate the results of other documents such as a SAR or ASA;

B. Required training for employees for each site task, operation, activity, or project and hazard;

C. Personnel protective equipment to be used by workers for each site task and operation;

D. Employee medical surveillance requirements;

E. Frequency and types of required personnel monitoring (including air, noise, radiation, heat, stress, etc.) including the methods of maintenance and calibration of monitoring and sampling equipment to be used;

F. Site control measures including work zones, buddy systems, security, communications, and safety work practices;

G. Decontamination procedures;

H. Emergency response plans for safe and effective responses to emergencies;

I. Confined space entry procedures; and

J. Programs to protect against and mitigate spills

The HASP shall identify work task and material related hazards associated with the operation (including decontamination and decommissioning) of a facility. A Preliminary Health and Safety Plan must be developed prior to site characterization phase of a project and updated in concert with the changing activities.

5.6 Integration of Safety and Health Requirements and Criteria

In order to avoid redundancy and the duplication of effort, safety and health documentation shall be integrated to the maximum extent practical. A safety analysis

(including the SAR) documents the hazard/accident analysis associated with radiological and chemical materials. Documentation of other hazard analyses or assessments are in other safety and health documents, such as contractor work packages; PSM documentation and HASPs; Material Safety Data Sheets; Safety Assessments; Fire Hazards Analyses; PRAs; Severe Accident Analysis; the Emergency and Hazardous Chemical Inventory Forms; Change Analysis; Hazard Communication Program; Chemical Hygiene Plan; Preliminary Hazards Analysis and the Activity Hazards Analysis.

Personnel preparing safety and health documents shall develop a single hazard analysis to the extent practical which includes or references similar analyses in other safety and health documents. This leads to the development of a consistent approach for each element in the analysis. In addition, other sections or elements of safety and health documents frequently mirror each other and can serve multiple functions (for example, site wide information on emergency preparedness may be referenced to satisfy facility specific requirements). Consistent input should be used or referenced in each of the documents, such as the SARs, safety analyses, PSM documentation, emergency planning documents, environmental assessment documentation, construction safety program documents, or HASPs on the same facility.

5.7 Maintaining Safety and Health Documents

Safety and health documents shall accurately reflect the state of a facility and its existing hazards. This can be accomplished in a number of ways (including boundary analysis or annual updates). EM facilities typically undergo one or more life cycles stages during the transition from operations, to deactivation and decommissioning, and finally through environmental restoration. Waste cleanup operations and construction projects are often dynamic activities. The potential nuclear and chemical hazards related to a facility are initially identified to serve as the basis for classifying that facility. As physical changes are anticipated or occur at a facility, the nature and extent of those changes shall be evaluated and measures to mitigate new or revised

hazards must be documented and implemented. Contractors shall have a process for ensuring that changes are evaluated and controlled that might:

A. Increase the risk from a hazard to the workers and/or the public beyond that previously analyzed, evaluated, and documented in the current document;

B. Reduce the reliability or effectiveness of features, controls, procedures, or processes used to mitigate hazards;

C. Introduce a new hazard; or

D. Reflect new information on existing hazards beyond that currently documented.

For nuclear facilities, as prescribed in DOE 5480.21, the USQ process shall be used for the evaluation of all changes when there is the potential for a change that could affect the safety and operating envelope (as reflected in the SAR, safety analysis, or TSR). Organizations maintaining safety and health documents for nuclear facilities (for worker safety and health issues), non-nuclear facilities, radiological facilities, and other industrial facilities, shall have a controlled and documented process for:

A. Identifying discrepancies between the current safety and health documents and the realities of the facility;

B. Resolving those discrepancies;

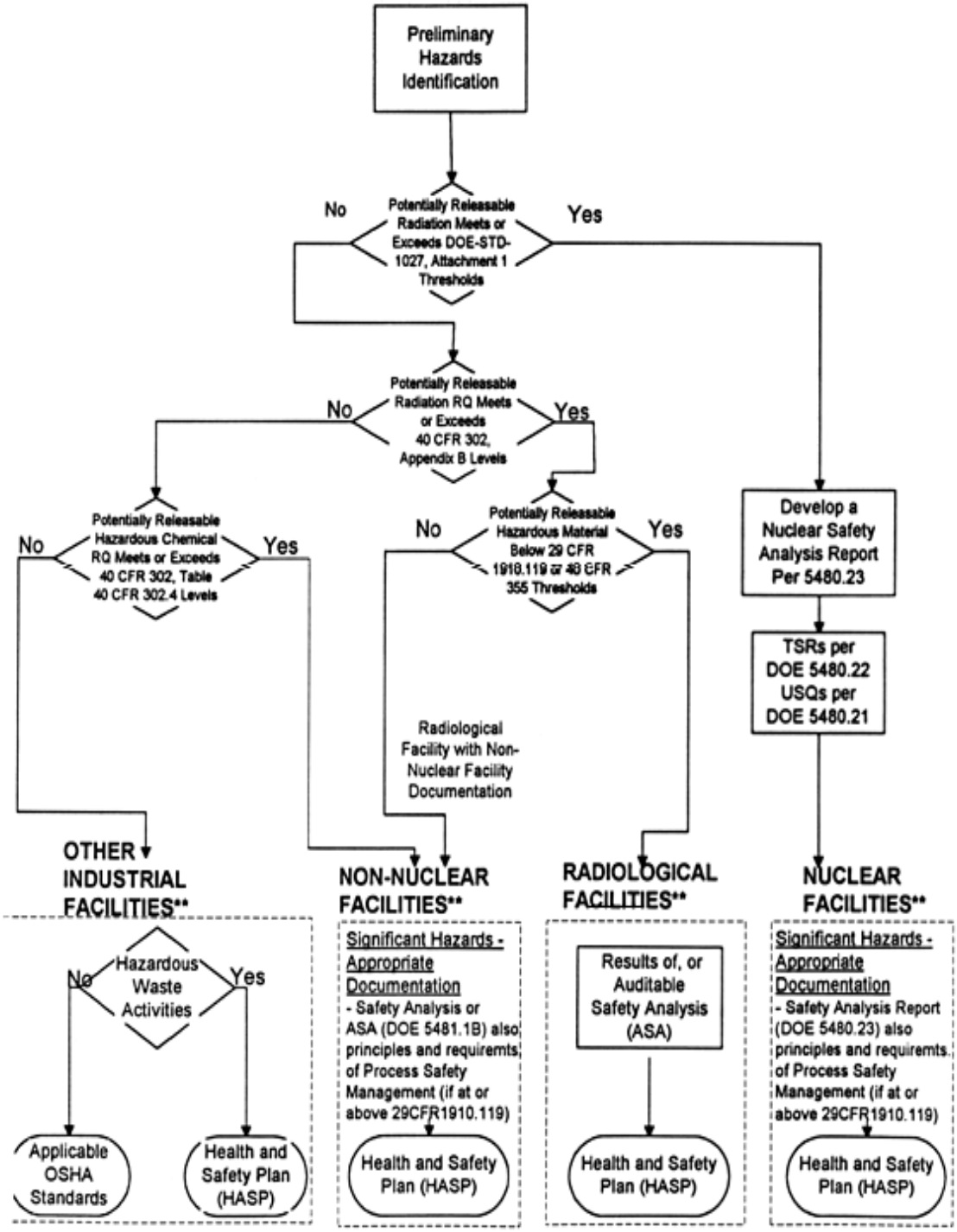
C. Reviewing and approving the resolution of the discrepancies; and

D. Updating, modifying, or strengthening the safety and health documents.

It is recommended in 29 CFR 1910 that an organization perform an annual review of hazard baseline documentation. Similarly, DOE 5480.23 requires annual updates to SARs also contractor self assessment programs are expected to verify the adequacy of

hazard baseline documentation. The approval of changes to hazard baseline documentation shall be at least to the same level as the original approval (unless the classification of the facility has previously been changed).

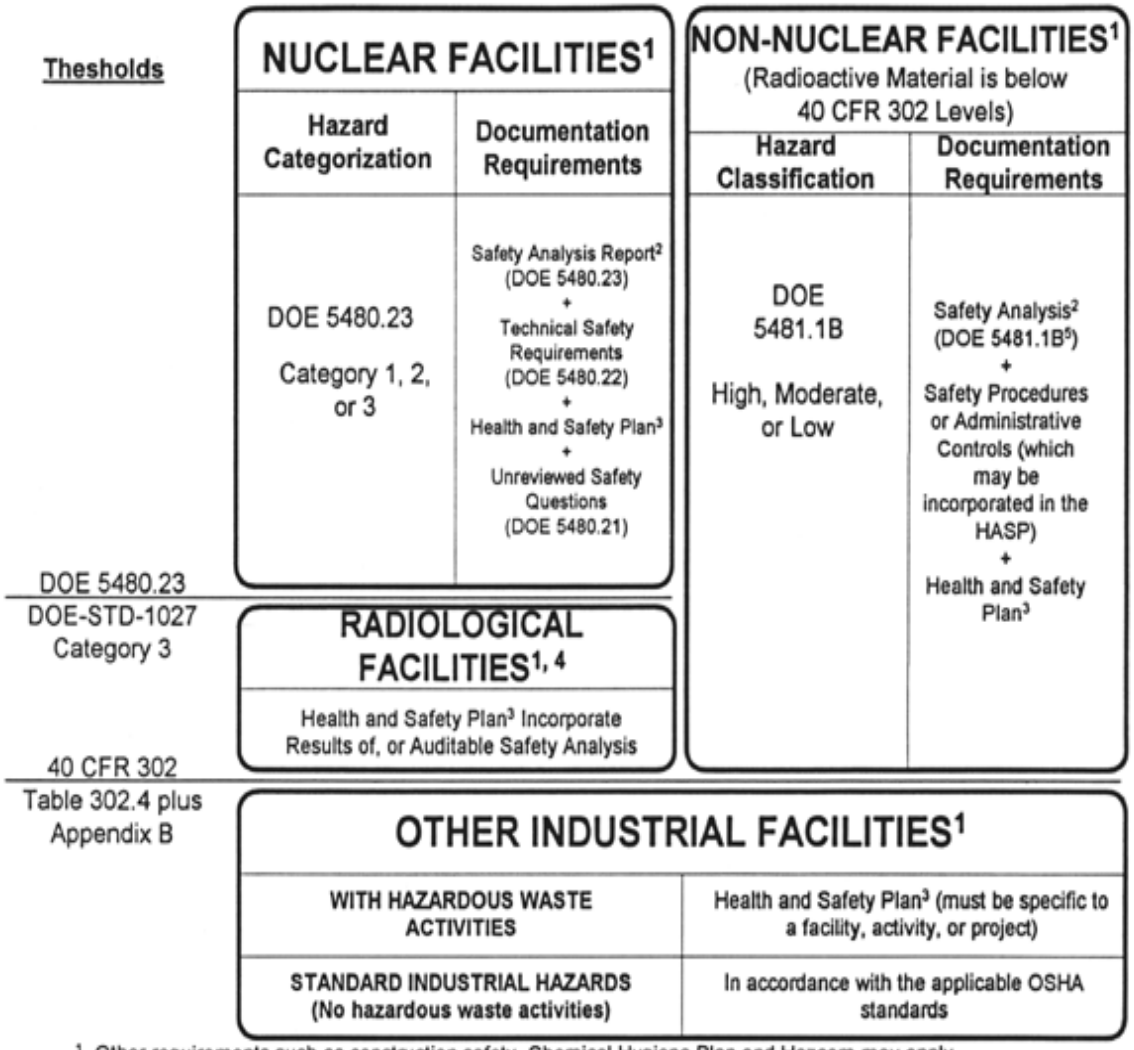
Figure 1 - EM Hazard Baseline Documentation Process



** Other types of safety and health hazard identification and control documentation may be necessary such as construction safety requirements, Chemical Hygiene Plans, and Hazcomm. All facilities with hazardous waste activities require a HASP as defined in 29 CFR 1910.120(a).

Figure 2 - Hazard Baseline Documentation Groupings

This chart illustrates the relationship among the different classes of EM facilities.



[1] Other requirements such as construction safety, Chemical Hygiene Plan and Hazcom may apply.

[2] Incorporate Process Safety Management (PSM) principles and requirements if the inventory of hazardous material meets or exceeds thresholds in 29 CFR 1910.119.

[3] HASPs are required for all hazardous waste activities as defined by 29 CFR 1910.120 (a).

[4] Radiological facilities with hazardous material inventories at or exceeding 29 CFR 1910.119 thresholds or the levels specified in 40 CFR 355, Emergency Planning and Notification, (if the chemicals are not listed in 29 CFR 1910.119), shall develop the same hazard baseline documentation as that required for non-nuclear facilities (per DOE 5481.1B).

[5] Non-nuclear facilities (with radioactive material inventory below 40 CFR 302, Table 302.4, Appendix B) with hazardous material inventories at or above 29 CFR 1910.119 thresholds or the levels specified in 40 CFR 355, Emergency Planning and Notification, (if the chemicals are not listed in 29 CFR 1910.119), shall develop a safety analysis in accordance with DOE 5481.1B (Chapter 1, sections 3(a) and (d), and Chapter 2, sections 2 and 4). Non-nuclear facilties with hazardous material inventories between PSM thresholds and potentially releasable 40 CFR 302 levels, shall develop an Auditable Safety Analysis.

CONCLUDING MATERIAL

Review Activity:

DOE	Operation/Field Offices
EM	Albuquerque Operations Office
EH	Chicago Operations Office
	Idaho Operations Office
	Oakland Operations Office
	Oak Ridge Operations Office
	Nevada Operations Office
	Richland Operations Office
	Savannah River Operations Office
	Nevada Field Office
	Rocky Flats Office
	West Valley Project Office
	Kirtland Area Office

National Laboratories, Contractors, and Consultants

Oak Ridge National Laboratory

Booz-Allen Hamilton, Inc.

Martin Marietta Energy Systems, Inc.

Westinghouse Electric Corporation

Preparing Activity:

DOE-EM-23

Project Number:

SAFT-0024